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Validity of Self-Reported Penicillin Allergies in a Community Population

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BACKGROUND

- About 10% of people claim to have a penicillin allergy.
- Most people with negative skin tests can tolerate oral doses of penicillin.
- Verifying a penicillin allergy is important because if patients can tolerate oral doses of penicillin, we can reduce patient exposure to other broad spectrum and more expensive antibiotics.

OBJECTIVE

To report the validity of self-reported penicillin allergies in patients presenting to an allergy clinic in Windsor.

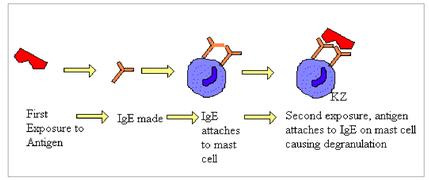
METHODS

- Retrospective chart review of 284 patients who presented to an allergy clinic for penicillin allergy testing from April 2011 to December 2014.
- Patients received skin testing, intradermal testing of penicillin and 5-day oral dose challenges of amoxicillin.
- Patients with history of serum sickness or Steven-Johnson syndrome/TENS were excluded from this clinic.

PATHOPHYSIOLOGY

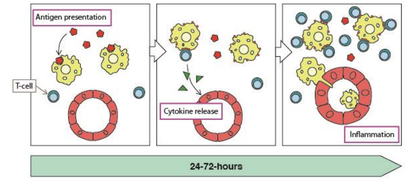
2 presentations of penicillin allergic reactions explored: immediate hypersensitivity reactions and delayed hypersensitivity reactions.

Immediate reactions



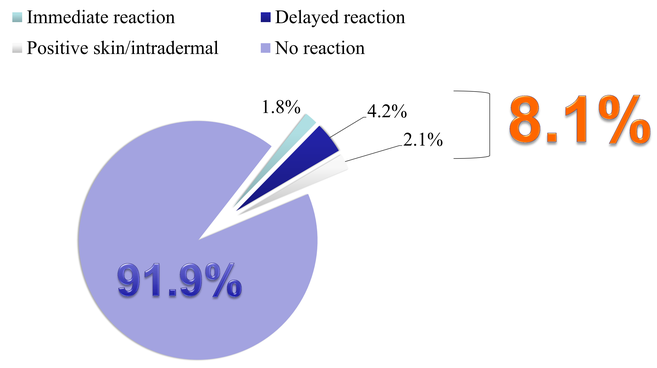
- Immediate reactions are IgE-antibody mediated and involve the release of histamine and other mediators.
- Reactions often occur within 6 hours of ingestion of penicillin, although it has also been documented within 24 hours of ingestion.
- Reactions often manifest as skin hives or systemic reactions including anaphylaxis.

Delayed reactions



- Delayed reactions are T-cell mediated, rather than through antibodies.
- Reactions often occur >24 hours after ingestion of penicillin.
- Reactions often manifest as a maculopapular rash on the skin.

RESULTS



- **8.1% (23 of 284) of self-reported penicillin allergies reacted positively to allergy testing.**
- **1.8% (5 of 284) of patients reacted within 24 hours of ingestion of the first dose of oral challenge.**
- **4.2% (12 of 284) of patients had a delayed reaction with a rash occurring 24 hours after first dose of oral amoxicillin.**

- There were 6 reactions (of 284) to skin and intradermal testing, whereby oral challenge was then not performed.
- Of the oral challenges, the reactions included 7 with hives, 12 with rash, and none with any cardiopulmonary compromise. This means there were no life-threatening reactions.

There were no patient characteristics identified that were significantly associated with a positive allergy test.

- There was no statistical significance of positive allergy testing in relation to reports of extra-cutaneous reactions vs. cutaneous reactions ($p>0.05$).
- There was no statistical significance of positive allergy testing with patient report of other allergies/asthma vs. no other allergies/asthma ($p>0.05$).

Drug-induced maculopapular rash usually the result of a delayed hypersensitivity reaction.

Drug-induced uticaria (hives) usually the result of an immediate hypersensitivity reaction.

CONCLUSION

92% of those believing that they are penicillin allergic are not!

Of those reporting a penicillin allergy, only 8% were proven to be allergic. Of these, the majority had a delayed reaction to penicillin which typically involved a non-life-threatening rash.

CLINICAL IMPLICATIONS

- Many clinical situations require penicillin as a first-line treatment.
- A proper penicillin allergy assessment can reduce patient morbidity associated with the use of other antibiotics.
- Other antibiotics increase hospital stay and antibiotic-resistant infections.
- This may help reduce overall healthcare costs in our community.

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